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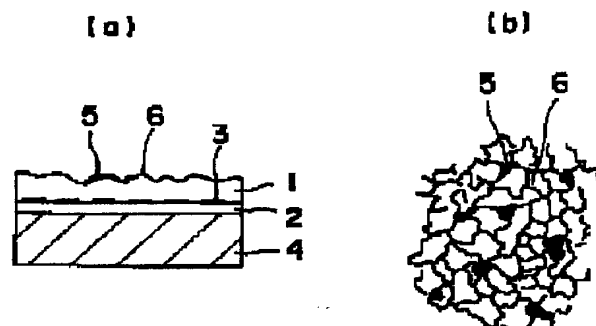
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TITLE : INTERIOR MATERIAL



ABSTRACT : PURPOSE: To create a cubic-feeling print pattern by installing an emboss part, which is combined with a mirror-surfaced part and a matted part, to the surface of a transparent thermal plasticity film having a print pattern.

CONSTITUTION: The rear surface of a transparent thermal plasticity resin film 1 or the front surface of an opaque thermal plasticity film 2 is printed, thereby forming a color ink layer, which is integrally laminated with a base material 4, which serves as a backing, thereby constituting an interior material. An uneven patterned emboss part is thermally copied on the surface of the transparent thermal plasticity film 1 where the emboss part is combined with a mirror-surfaced portion 5 having glossiness ranging from 80% to 95% and a matted portion having glossiness ranging from 10% to 25%. This construction makes it possible to create an impression that a plane design looks as if it is a 3-D figure, and what is more, to provide a bright feeling to a satisfactory extent.

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CLAIMS

[Claim(s)]

[Claim 1]In an interior material which laminated a backing layer used as a transparent thermoplastic resin film, and a color ink print layer which printed a pattern, an opaque thermoplastic resin film and a substrate one by one, An interior material providing an embossed part which united and gave a mirror plane portion and a lusterless portion in the surface of this transparent thermoplastic resin film.

[Claim 2]The interior material according to claim 1 in which a degree of brilliancy (60 degrees) of a mirror plane portion is characterized by a degree of brilliancy (60 degrees) of a lusterless portion being -25 % 10% 95% 80% - in an embossed part formed in the surface.

[Claim 3]The interior material according to claim 1 or 2 a lusterless portion and a mirror plane portion adjoining repeatedly by turns, and having become a dispersion state in an embossed part formed in the surface.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application]This invention relates to the interior material which has the brightness and a cubic effect near a living rock, and relates to construction interior materials in which especially design nature was improved, such as a floor tile and a wallplate.

[0002]

[Description of the Prior Art]Although printing was expressing the feeling of a natural material especially a stone, wood, etc. with this kind of interior material conventionally, in mere printing, the pattern was superficial and design nature was [when] also truly as scarce as the artificial product at *****. Then, in order to express natural material feeling with reality, another art was taken in besides mere printing.

[0003]As an example of conventional technology, drawing 4 a is an example of the transparent thermoplastic resin film 11 which has the embossed part 12 on the surface, the printed opaque thermoplastic resin film 13, and the interior material which consists of the substrate 16, When printing to the opaque thermoplastic resin film 13, brightness and a cubic effect were selectively taken out with using the photoluminescence ink 14 containing the color ink 15, a metal powder, or pearl powder. Drawing 4 b is an example of the transparent thermoplastic resin film 17 which has the ENMBOSU part 18 on the surface, the thermoplastic resin film 19 containing the printed photoluminescent pigment, and the interior material which consists of the substrate 21, When printing to the thermoplastic resin film containing photoluminescent pigment, only the color ink 20 was used and the thermoplastic resin film containing lower layer photoluminescent pigment of this printing layer was expressing expression of brightness.

[0004]

[Problem(s) to be Solved by the Invention]In drawing 4 a, although most generally in the case of printing of drawing 4 [of a conventional example] a, and b of a living rock design and a native wood design carried out, since the color ink 15 and the photoluminescence ink 14 were on the same flat surface, the printing design seen from the surface embossed part

was superficial, and deficient in a cubic effect. Since brightness appeared extensively under the influence of the thermoplastic resin film containing photoluminescent pigment, and the gloss (gloss) of the surface embossed part 18 was also almost uniform and drawing 4 b did not have a difference of the strength of the gloss to feel, it was deficient in a cubic effect too. Provide what this invention solves said conventional problem, and has brightness in the interior material which has a printing pattern, and was excellent in a cubic effect, and this, In the interior material which laminated the backing layer used as a transparent thermoplastic resin film, and the color ink print layer which printed the pattern, an opaque thermoplastic resin film and a substrate one by one, It is an interior material providing the embossed part which united and gave the mirror plane portion and the lusterless portion in the surface of this transparent thermoplastic resin film.

[0005]

[Means for Solving the Problem] Even if an artificer was superficial printing, he found out that a cubic effect and brightness could be expressed by distinguishing between a surface embossed part. This invention is explained in detail below.

[0006] A thermoplastic resin film with transparent 1 of drawing 1 a and 2 are opaque thermoplastic resin films, and form the color ink print layer 3 by printing on a rear face of this transparent thermoplastic resin film 1, or the surface of the opaque thermoplastic resin film 2. In an interior material which carried out laminate integration of the substrate 4 which are these transparent thermoplastic resin films 1, the opaque thermoplastic resin film 2, the color ink print layer 3, and a lining material, Hot printing of the embossed part which has an irregular pattern having the mirror plane portion 5 and the lusterless portion 6 in the surface of this transparent thermoplastic resin film 1 is carried out. 80% - 95% of a degree of brilliancy (60 degrees) of a transferred mirror plane portion is desirable, and 10% - 25% of a degree of brilliancy (60 degrees) of a lusterless portion is [a degree of brilliancy] desirable. A degree-of-brilliancy (60 degrees) difference of a mirror plane portion at this time and a lusterless portion becomes the above at least 55%, and it is so good that this difference is large, and it is preferred that there is not less than 70%. [of a cubic effect or brightness] However, a degree of brilliancy becomes the middle gloss which cannot be said to be a mirror plane and grinding by a surface state of 80% of range 25% -, either.

[0007] If it unites and has a mirror plane portion and a lusterless portion on such conditions about a surface embossed part, What kind of irregular pattern may be sufficient, for example, if a pattern of printing is a living rock, there are a jet burner, BISHAN, small ****, a Dollo eye, etc., and if it is native wood, a hair line, a lead pipe, a mat, etc. will be mentioned. As long as a pattern of printing is an abstract handle, alignment embossing or embossing of a mismatch handle with a pattern may be sufficient.

[0008] Drawing 1 b is a flat-surface explanatory view of drawing 1 a, and it is preferred to have a form where the mirror plane portion 5 was set into the lusterless portion 6 in this way, From such gloss differences, a mirror plane portion shines glitteringly and can be seen, if a lower layer printing pattern is granite, the same design as brightness in a quartz

portion of natural granite will appear, and sensibility of natural granite will be reproduced with reality. Since that position is changed as at random as a crevice of an embossed part, heights, or a slant surface part, the mirror plane portion 5 of an embossed part of this surface is glitteringly reflected, whenever it shifts a look.

[0009]A cubic effect of an interior material of this invention is explained further here.

Although a beam of light which entered from the surface side (observer side) is remarkably reflected and penetrated in a mirror plane portion of an embossed part of the transparent thermoplastic resin film 1, in a lusterless portion, reflection and a penetration are weak and a situation of a pattern of the lower layer color ink layer 3 which is seen from the surface side for this reason of them is as follows. From a mirror plane portion, although a lower layer pattern is penetrated and is visible clearly, since embossing is given to the surface of the transparent thermoplastic resin film 1, in a lusterless portion, scattered reflection of light happens, and to a lower layer pattern, incident light does not reach, but blooms cloudy and is in sight. For this reason, since a pattern which is visible from a lusterless portion seems to become a shadow of a pattern which is visible from a mirror plane portion, depth is given to a printed pattern and it looks three-dimensional. In order to give a cubic effect, what is necessary is just to thicken the surface transparent thermoplastic resin film 1, and 50 micrometers - 1000 micrometers of things about 100 μm - 500 μm are preferably effective practical. In less than 50 micrometers, a cubic effect is not perceived, but it is easy to produce inconvenience, such as curvature of a product, at the same time it will give unnatural sensibility, if it exceeds 1000 micrometers.

[0010]About brightness, a degree of reflection of a beam of light which entered from the surface side (observer side) has influenced, and a mirror plane portion is more conspicuous and it is visible, so that gloss difference of a mirror plane portion and a lusterless portion is large. However, it is required for a mirror plane portion and a lusterless portion to be the dispersion state which adjoined repeatedly by turns, and a thing of a grade has a ratio of a gross area of a mirror plane portion to a gross area of a lusterless portion preferably more effective still in order to give brightness 10% - 40% 5% - 60%. 5%, by the following, if there are too few mirror plane portions, and brightness is not perceived but it exceeds 60%, there will be too many mirror plane portions, and, on the whole, they will shine, and moderate brightness will no longer be expressed. that is, -- the state where a mirror plane portion was set at random into a lusterless portion is good -- change of an incidence angle of a beam of light, or movement of an observer's look -- reflection of light of a mirror plane portion -- the surface -- glitteringly -- it shines and is visible.

[0011]Drawing 2 is other examples from which an embossed part on the transparent surface of a thermoplastic resin film of an interior material of this invention differs, and mentioned a case of an abstract handle as an example as a pattern of printing. a is a typical section explanatory view and b is a flat-surface explanatory view. A lower layer printing pattern looks three-dimensional by an effect of scattered reflection of light in the surface by providing the difference of elevation by a surface embossed part like 7 and 7',

even if it is the same mirror plane portion, as a sees and shows, and also combining like b the lusterless portion 8 and 8' from which gloss differs. Since a printing pattern in this case is an abstract handle, even if a surface embossed part makes it align with a pattern, it is not necessary to carry out but, and. When not making it align, it sees from the surface, and the half may be able to do a part that a half is visible from a lusterless portion, also about the same pattern portion of a pattern, and depth sensation is obtained more from a mirror plane portion by illusion of eyes.

[0012]Drawing 3 is an example of further others of this invention, and raised native wood skin as an example as a pattern of printing. a is a typical section explanatory view and b is the transverse-plane explanatory view. Although an embossed part of the surface in this case is the shape almost near a flat, a grain portion of a printing pattern is used as the lusterless portions 10, such as a mat, it is using a portion of gloss of native wood as the mirror plane portion 9, and natural brightness of native wood is obtained.

[0013]Since an embossed part which has gloss difference in the surface of a transparent thermoplastic resin film is formed in the case of which and a lower layer printing pattern is seen through thickness of this transparent thermoplastic resin film 1 to it, depth sensation appears in a handle. the conventional thing could give photoluminescence on a flat surface of a color ink print layer, came out, and was deficient in a cubic effect, and its brightness was also unnatural.

[0014]Next, drawing 1 explains concretely each class which constitutes an interior material of this invention. It is what was provided in order that the thermoplastic resin film 1 with the transparent surface might look at through a fluoroscope and protect the lower layer color ink print layer, Construction material which has abrasion resistance, resistance to contamination, weatherability, etc. is preferred, for example, films, such as polyvinyl chloride system resin, polyethylene resin, polypropylene resin, and ABS plastics, are preferred. These films are arbitrary processing methods, such as calender molding, extrusion molding, and inflation molding, and are fabricated by range whose thickness is 50 micrometers - 1000 micrometers. Although the opaque thermoplastic resin film 2 of a lower layer as well as the transparent thermoplastic resin film 1 is fabricated, it is colored by paints, and is opaque and 50 micrometers - 200 mum are preferred for thickness.

[0015]The color ink print layer 3 is printed by methods, such as publicly known gravure printing, Toppan Printing, and silk printing, by a field which has not given an embossed part of the transparent thermoplastic resin film 1, or the surface of the opaque thermoplastic resin film 2. Other construction material may be sufficient as the substrate 4 of the bottom of the heap, and what is necessary is just to define it arbitrarily also with the same construction material as a film used for the upper layer if needed about the thickness.

[0016]since it can bond by thermo-compression if a substrate of the bottom of the heap is also thermoplastics, for example in order to carry out laminate integration of each each class -- a continuation lamination -- or what is necessary is just to carry out press forming, and a surface embossed part can also be simultaneously formed at this time. An embossed

part which has a mirror plane portion and a lusterless portion is processed into a roll or a press board by methods, such as etching, mill sculpture, and ****, and is transferred to the thermoplastic resin film 1 with the transparent surface by heat application of pressure. Although the depth of unevenness of embossing provided at this time changes also with subjects of a printing pattern, an effect shows up most in the range of 10 micrometers - 300 μm . When substrates of the bottom of the heap are construction material other than thermoplastics, laminate integration is carried out by the dry laminate method which used adhesives etc.

[0017]That is, as for an interior material of this invention, a superficial printing pattern looks in three dimensions by giving an irregular pattern of an embossed part which has a mirror plane portion and a lusterless portion on the surface of a transparent thermoplastic resin film, and sufficient brightness is obtained. Gloss difference of a mirror plane portion of an embossed part and a lusterless portion acts on people's vision, and this is sensed above by illusion of eyes.

[0018]An example explains this invention in detail below.

white with a thickness of 80 micrometers which gave a natural granite handle to the surface by a transparent film made of polyvinyl chloride resin and gravure printing of thickness 300 μm -- in a process in which bond a lining material made of polyvinyl chloride resin (an opaque film made of polyvinyl chloride resin, and 2.6 mm in thickness) (substrate) by thermo-compression with a continuation laminating machine, and a floor tile is manufactured, 30%, a ratio of a gross area of a mirror plane portion [as opposed to / in a degree of brilliancy (60 degrees) of 300% and a lusterless portion / degree of brilliancy / (60 degrees) / of a mirror plane portion / a gross area of a lusterless portion at 10%] carried out heat pressing to the floor tile surface with an embossing roll into which the crimp depth etched a BISHAN handle of 0.2 mm - 0.6 mm, and carried out crimp transfer. When a degree of brilliancy (60 degrees) of a mirror plane portion of an embossed part of a product was measured at this time, a lusterless portion was 16% at 87%. The crimp depth of a product was 0.1 mm - 0.3 mm, and a transfer rate of a crimp of an embossing roll was about 50%. When a product was pierced to 457.2 mm squares, a floor was covered and the floor tile surface was walked, brightness of natural granite is expressed and a cubic effect which cannot think a printing pattern was acquired.

[0019](Comparative example) Heat pressing was carried out with an embossing roll which etched a BISHAN handle in which a mirror plane portion does not have 10% of a surface degree of brilliancy (60 degrees) in order, and whose crimp depth is 0.2 mm-0.6mm, and the floor tile surface was made to carry out crimp transfer in a manufacturing process of a floor tile of the completely same composition as an example. When a degree of brilliancy (60 degrees) of a product at this time was measured, it became uniform gloss extensively 20% in order. About the crimp depth of a product, a transfer rate of a crimp of an embossing roll was the same as an example at about 50% at 0.1 mm-0.3mm. This product was pierced like an example, since surface gloss looked uniform when a floor is covered

and it evaluates, a printing pattern was superficial, and it was deficient in a cubic effect, and brightness of natural granite was not seen. Measurement of a degree of brilliancy (60 degrees) used Murakami Color Research Laboratory GMX-202 (60 degrees).

[0020]

[Effect of the Invention]By giving the irregular pattern of the embossed part which has a mirror plane portion and a lusterless portion on the surface of a transparent thermoplastic resin film, the brightness which a superficial printing pattern is visible to a solid handle with depth, and changes with directions to see is given. This does not need complicated printing technique still like before, but since an effect shows up only by embossing simultaneously performed at the time of a lamination, it can manufacture it easily and cheaply.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]a The typical section explanatory view of an example of the interior material of this invention.

The typical flat-surface explanatory view of an example of the interior material of b this invention.

[Drawing 2]a The typical section explanatory view of an example of the interior material of this invention.

The typical flat-surface explanatory view of an example of the interior material of b this invention.

[Drawing 3]a The typical section explanatory view of an example of the interior material of this invention.

The typical flat-surface explanatory view of an example of the interior material of b this invention.

[Drawing 4]a The typical section explanatory view of a conventional example.

The typical section explanatory view of the conventional example of b others.

[Description of Notations]

1, 11, and 17 Transparent thermoplastic resin film,

2 and 13 Opaque thermoplastic resin film,

3 Color ink print layer,

4, 16, and 21 Substrate,

5, 7, and 7 ' and 9 Mirror plane portion,

6, 8, and 8 ', 10 lusterless portions,

12, 18 embossed parts,

14 Photoluminescence ink,

15 and 20 Color ink,

19 The thermoplastic resin film containing photoluminescent pigment.

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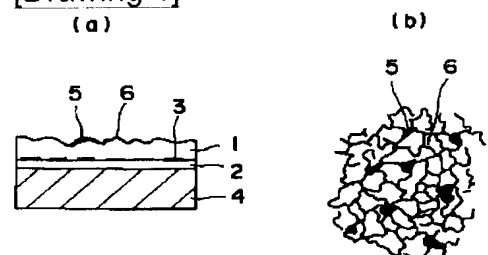
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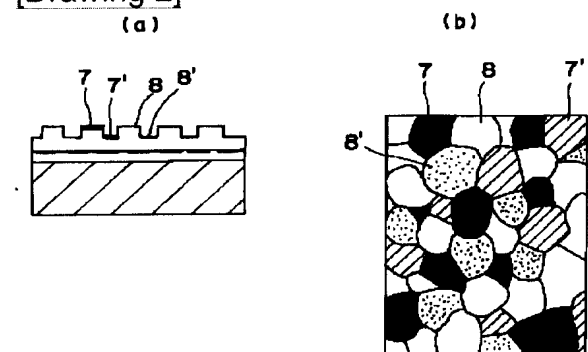
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DRAWINGS

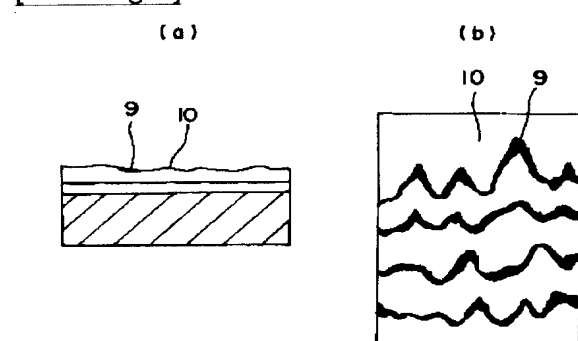
[Drawing 1]



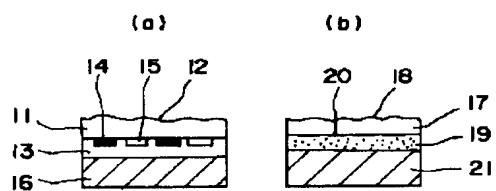
[Drawing 2]



[Drawing 3]



[Drawing 4]



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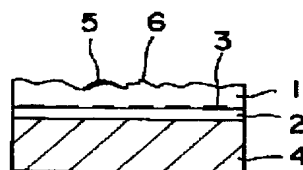
(54) 【発明の名称】 内装材

(57) 【要約】 (修正有)

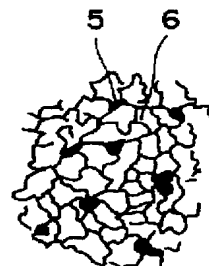
【目的】 エンボス加工のみにより、容易に、しかも安価に天然石、天然木を模倣した印刷絵柄に光輝感及び優れた立体感を与え、天然物の感じをリアルに表現させた内装材を提供する。

【構成】 透明な熱可塑性樹脂フィルム1と絵柄を印刷した色インキ印刷層3、不透明な熱可塑性樹脂フィルム2、基材4となる裏打ち層とを順次積層した内装材において、この透明な熱可塑性樹脂フィルムの表面に鏡面部分5と艶消し部分6とをあわせ施したエンボス部を設けることを特徴とする内装材。

(a)



(b)



【特許請求の範囲】

【請求項1】 透明な熱可塑性樹脂フィルムと絵柄を印刷した色インキ印刷層、不透明な熱可塑性樹脂フィルム、基材となる裏打ち層とを順次積層した内装材において、この透明な熱可塑性樹脂フィルムの表面に鏡面部分と艶消し部分とをあわせ施したエンボス部を設けることを特徴とする内装材。

【請求項2】 表面に形成されたエンボス部において、鏡面部分の光沢度(60°)が80%～95%、艶消し部分の光沢度(60°)が10%～25%であることを特徴とする請求項1記載の内装材。

【請求項3】 表面に形成されたエンボス部において、艶消し部分と鏡面部分とが交互に繰り返し隣接し、分散状態となっていることを特徴とする請求項1または2記載の内装材。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は天然石に近い光輝感や立体感を有する内装材に関するものであり、特に意匠性が改良された床タイル、壁材などの建築内装材に関するものである。

【0002】

【従来の技術】従来この種の内装材では、天然素材、特に石材、木材等の感覚を印刷により表現していたが、単なる印刷では模様が平面的で、いかにも作り物といった感じで意匠性も乏しかった。そこで天然素材感覚をよりリアルに表現するために単なる印刷の他に別の技術を取り入れていた。

【0003】従来技術の一例として、図4aは表面にエンボス部12を有する透明な熱可塑性樹脂フィルム11と、印刷された不透明な熱可塑性樹脂フィルム13 基材16とからなる内装材の一例で、不透明な熱可塑性樹脂フィルム13に印刷する際に、色インキ15と金属粉あるいはパール粉を含有した光輝性インキ14を使用することで部分的に光輝感、立体感を出していた。また、図4bは、表面にエンボス部18を有する透明な熱可塑性樹脂フィルム17、印刷された光輝性顔料を含有した熱可塑性樹脂フィルム19、基材21とからなる内装材の一例で、光輝性顔料を含有した熱可塑性樹脂フィルムに印刷する際は、色インキ20のみを使用し、光輝感の表出についてはこの印刷層の下層の光輝性顔料を含有した熱可塑性樹脂フィルムで表現していた。

【0004】

【発明が解決しようとする課題】従来例の図4a、bともに、天然石柄、天然木柄の印刷の際に最も一般的におこなわれているものであるが、図4aでは、色インキ15と光輝性インキ14が同一平面上にあるため、表面のエンボス部から見た印刷柄は、平面的で立体感に乏しいものであった。また図4bは光輝性顔料を含有する熱可塑性樹脂フィルムの影響で全面的に光輝感が現れ、また表面

のエンボス部18の光沢(艶)もほぼ均一になっていて、視覚に感ずる光沢の強弱の差がないため、やはり立体感に乏しかった。本発明は前記従来の問題点を解決するものであり、印刷模様を有する内装材において、光輝感があり且つ立体感に優れたものを提供するもので、これは、透明な熱可塑性樹脂フィルムと絵柄を印刷した色インキ印刷層、不透明な熱可塑性樹脂フィルム、基材となる裏打ち層とを順次積層した内装材において、この透明な熱可塑性樹脂フィルムの表面に鏡面部分と艶消し部分とをあわせ施したエンボス部を設けることを特徴とする内装材である。

【0005】

【課題を解決するための手段】発明者は、平面的な印刷であっても、表面のエンボス部に光沢差をつけることにより、立体感及び光輝感を表現できることを見出した。以下本発明を詳細に説明する。

【0006】図1aの1は透明な熱可塑性樹脂フィルム、2は不透明な熱可塑性樹脂フィルムであり、この透明な熱可塑性樹脂フィルム1の裏面または不透明な熱可塑性樹脂フィルム2の表面に印刷を施すことにより、色インキ印刷層3を形成する。これら透明な熱可塑性樹脂フィルム1、不透明な熱可塑性樹脂フィルム2、色インキ印刷層3及び裏打ち材である基材4とを積層一体化した内装材において この透明な熱可塑性樹脂フィルム1の表面に 鏡面部分5と艶消し部分6とを合わせ持った凹凸模様のあるエンボス部を熱転写させる。転写された鏡面部分の光沢度(60°)は80%～95%が好ましく、艶消し部分の光沢度(60°)は10%～25%が好ましい。またこのときの鏡面部分と艶消し部分の光沢度(60°)差は少なくとも55%以上となり、この差が大きいほど立体感や光輝感がよく、70%以上あることが好ましい。しかし光沢度が25%～80%の範囲の表面状態では鏡面とも艶消しとも言えない中間の光沢になる。

【0007】表面のエンボス部については、このような条件で鏡面部分と艶消し部分とをあわせ持っていれば、いかなる凹凸模様でも良く、例えば印刷の絵柄が天然石であれば、ジェットバーナー、ビシャン、小叩き、ドロ目等があり、また天然木であれば、ヘアライン、導管、マット等が挙げられる。印刷の絵柄が抽象柄であれば絵柄との同調エンボスでも mismatch柄のエンボスでも良い。

【0008】図1bは図1aの平面説明図であり、このように艶消し部分6の中に鏡面部分5がちりばめられた形になっているのが好ましく、これらの光沢差から、鏡面部分がきらきらと輝いて見え、下層の印刷絵柄が例えば御影石であれば、天然御影石の石英部分の輝きと同じ意匠が現出され、よりリアルに天然御影石の感じが再現される。またこの表面のエンボス部の鏡面部分5は、その位置が、エンボス部の凹部、凸部あるいは斜面部とランダムに変えられているため、視線をずらす毎にきらき

らと反射する。

【0009】ここで更に本発明の内装材の立体感について説明する。表面側（観察者側）から入射した光線は、透明な熱可塑性樹脂フィルム1のエンボス部の鏡面部分において著しく反射及び透過するが、艶消し部分においては反射及び透過は弱く、このため表面側から見る下層の色インキ層3の絵柄の様子が以下のようにになる。鏡面部分からは、下層の絵柄は透過されはっきり見えるが、艶消し部分においては、透明な熱可塑性樹脂フィルム1の表面にエンボスが施されているために、光の乱反射が起こり、入射光線は下層の絵柄まで到達せず曇って見える。このため、艶消し部分から見える絵柄は、鏡面部分から見える絵柄の影になるように見えるので、印刷された絵柄に奥行きが与えられ、立体的に見える。立体感を与えるためには、表層の透明な熱可塑性樹脂フィルム1を厚くすればよく、実用的には $50\mu\text{m}$ ～ $1000\mu\text{m}$ 、好ましくは $100\mu\text{m}$ ～ $500\mu\text{m}$ 程度のものが有効である。 $50\mu\text{m}$ 未満では立体感が知覚されず、 $1000\mu\text{m}$ を超えると不自然な感じを与えると同時に製品の反りなど不都合が生じやすい。

【0010】また光輝感については、表面側（観察者側）から入射した光線の反射の度合いが影響しており、鏡面部分と艶消し部分の光沢差が大きいほど、より鏡面部分が際立って見える。但し光輝感を与えるためには、鏡面部分と艶消し部分とが交互に、繰り返して隣接した分散状態となっていることが必要で、更に、艶消し部分の総面積に対する鏡面部分の総面積の比率が5%～60%、好ましくは10%～40%程度のものが有効である。5%未満では、鏡面部分が少な過ぎて光輝感が知覚されず、60%を超えると鏡面部分が多過ぎて全体的に光ってしまい、適度な光輝感が表出されなくなる。つまり、艶消し部分の中に鏡面部分がランダムにちりばめられた状態が良く、光線の入射角の変化または観察者の視線の移動によって鏡面部分の光の反射で表面がキラキラと輝いて見える。

【0011】図2は本発明の内装材の透明な熱可塑性樹脂フィルム表面のエンボス部の異なる他の例であり、印刷の絵柄として抽象柄の場合を例に挙げた。aは模式的断面説明図、bは平面説明図である。aから見てわかるように、同じ鏡面部分であっても7、7'のように表面のエンボス部で高低差を設け、更に光沢の異なる艶消し部分8、8'をbのように組み合わせることにより、表面での光の乱反射の効果で下層の印刷絵柄が立体的に見える。この場合の印刷絵柄は抽象柄であるため、表面のエンボス部は絵柄と同調させてもさせなくてもよいが、同調させない場合、表面から見て、絵柄の同じ模様部分についても半分は鏡面部分から、半分は艶消し部分から見える、という箇所ができる可能性もあり、目の錯覚でより奥行き感が得られる。

【0012】図3は本発明の更に他の例であり、印刷の

絵柄として、天然木肌を例としてあげた。aは模式的断面説明図、bはその正面説明図である。この場合の表面のエンボス部はほとんどフラットに近い形状であるが、印刷絵柄の木肌部分を、マット等の艶消し部分10とし、天然木の照りの部分を鏡面部分9とすることで、天然木の自然な光輝感が得られる。

【0013】いずれの場合においても、透明な熱可塑性樹脂フィルムの表面に光沢差のあるエンボス部を形成し、この透明な熱可塑性樹脂フィルム1の厚さを通して下層の印刷絵柄を見ているので、柄に奥行き感が出る。従来のものは、色インキ印刷層の平面上で光輝性を付与してただけで、立体感に乏しく、光輝感も不自然であった。

【0014】次に本発明の内装材を構成する各層について図1により具体的に説明する。表面の透明な熱可塑性樹脂フィルム1は、その下層の色インキ印刷層を透視及び保護するために設けられたもので、耐摩耗性、耐汚染性、耐候性等を有する材質が好ましく、例えばポリ塩化ビニル系樹脂、ポリエチレン樹脂、ポリプロピレン樹脂、ABS樹脂等のフィルムが好適である。これらのフィルムは、カレンダー成形、押出成形、インフレーション成形などの任意の加工方法で、厚さが $50\mu\text{m}$ ～ $1000\mu\text{m}$ の範囲に成形される。その下層の不透明な熱可塑性樹脂フィルム2も透明な熱可塑性樹脂フィルム1と同様に成形されるが、顔料により着色され、不透明で厚さは $50\mu\text{m}$ ～ $200\mu\text{m}$ が好適である。

【0015】色インキ印刷層3は透明な熱可塑性樹脂フィルム1のエンボス部を施してない面あるいは不透明な熱可塑性樹脂フィルム2の表面に、公知のグラビア印刷、凸版印刷、シルク印刷等の方法で印刷される。最下層の基材4は、上層に用いられているフィルムと同じ材質でも、他の材質でも良く、またその厚さについては必要に応じて任意に定めれば良い。

【0016】それぞれの各層を積層一体化させるには、例えば最下層の基材も熱可塑性樹脂であれば、熱圧着できるため、連続ラミネートまたはプレス成形すれば良く、同時に表面のエンボス部もこの時に形成できる。鏡面部分と艶消し部分とを有するエンボス部は、エッチング、ミル彫刻、手彫等の方法でロールまたはプレス板に加工され、熱加圧によって、表面の透明な熱可塑性樹脂フィルム1に転写する。このとき設けられたエンボスの凹凸の深さは印刷絵柄の対象物によっても異なるが、 $10\mu\text{m}$ ～ $300\mu\text{m}$ の範囲で最も効果が現れる。最下層の基材が熱可塑性樹脂以外の材質である場合は、接着剤等を用いたドライラミネート法により積層一体化させる。

【0017】即ち本発明の内装材は、透明な熱可塑性樹脂フィルムの表面に鏡面部分と艶消し部分とを有するエンボス部の凹凸模様を施すことによって、平面的な印刷絵柄が立体的に見え、且つ十分な光輝感が得られる。これはエンボス部の鏡面部分と艶消し部分の光沢差が人の

視覚に作用し、目の錯覚で上記のように感じられるのである。

【0018】以下実施例により本発明を詳細に説明する。

（実施例）厚さ300 μm の透明なポリ塩化ビニル樹脂製フィルムとグラビア印刷により天然御影石柄を表面に施した厚さ80 μm の白色不透明なポリ塩化ビニル樹脂製フィルムと厚さ2.6mm のポリ塩化ビニル樹脂製裏打ち材（基材）を連続ラミネーターで熱圧着して床タイルを製造する過程において、鏡面部分の光沢度（60°）が300%、艶消し部分の光沢度（60°）が10%で、艶消し部分の総面積に対する鏡面部分の総面積の比率が30%、シボ深さが0.2 mm～0.6 mmのビシャン柄をエッチングしたエンボスロールで床タイル表面に加熱加圧し、シボ転写させた。このとき製品のエンボス部の鏡面部分の光沢度（60°）を測定すると87%で艶消し部分は16%であった。また製品のシボ深さは0.1 mm～0.3mmであり、エンボスロールのシボの転写率は約50%であった。更に製品を457.2mm 角に打ち抜き、床に敷きつめて床タイル表面を歩行してみたところ、天然御影石の光輝感が出されており、印刷絵柄とは思えない立体感が得られた。

【0019】（比較例）実施例とまったく同様の構成の床タイルの製造過程において、表面の光沢度（60°）が10%前後で、鏡面部分のない、シボ深さが0.2 mm～0.6 mm のビシャン柄をエッチングしたエンボスロールで加熱加圧して床タイル表面にシボ転写させた。この時の製品の光沢度（60°）を測定すると、20%前後で、全面的に均一な艶になった。また、製品のシボ深さについては0.1 mm～0.3mm でエンボスロールのシボの転写率も約50%で実施例と同様であった。この製品を実施例と同様に打ち抜き、床に敷きつめて評価したところ、表面の艶が均一に見えるため、印刷絵柄は平面的で、立体感に乏しく、また天然御影石の光輝感は見られなかった。なお光沢度（60°）の測定は、（株）村上色彩技術研究所製G

MX-202(60°)を使用した。

【0020】

【発明の効果】透明な熱可塑性樹脂フィルムの表面に鏡面部分と艶消し部分とを有するエンボス部の凹凸模様を施すことによって、平面的な印刷絵柄が奥行きのある立体柄に見え、見る方向によって異なる光輝感が与えられる。これは更に従来のような複雑な印刷技術を必要とせず、ラミネート時に同時に行うエンボス加工のみで効果が出るため容易にしかも安価に製造できる。

【図面の簡単な説明】

【図1】a 本発明の内装材の一例の模式的な断面説明図。

b 本発明の内装材の一例の模式的な平面説明図。

【図2】a 本発明の内装材の一例の模式的な断面説明図。

b 本発明の内装材の一例の模式的な平面説明図。

【図3】a 本発明の内装材の一例の模式的な断面説明図。

b 本発明の内装材の一例の模式的な平面説明図。

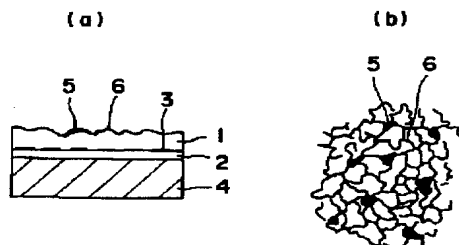
【図4】a 従来例の模式的な断面説明図。

b 他の従来例の模式的な断面説明図。

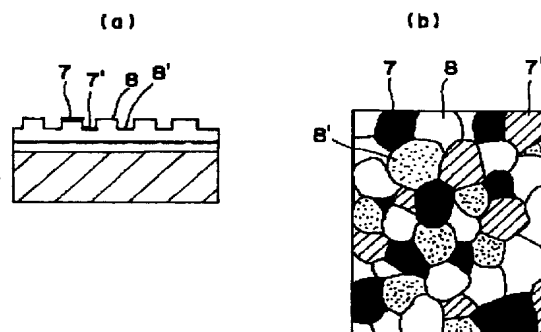
【符号の説明】

- | | |
|-----------|-----------------------|
| 1 11 17 | 透明な熱可塑性樹脂フィルム、 |
| 2 13 | 不透明な熱可塑性樹脂フィルム、 |
| 3 | 色インキ印刷層、 |
| 4 16 21 | 基材、 |
| 5 7 7'、9 | 鏡面部分、 |
| 6 8 8'、10 | 艶消し部分、 |
| 12 18 | エンボス部、 |
| 14 | 光輝性インキ、 |
| 15 20 | 色インキ、 |
| 19 | 光輝性顔料を含有する熱可塑性樹脂フィルム。 |

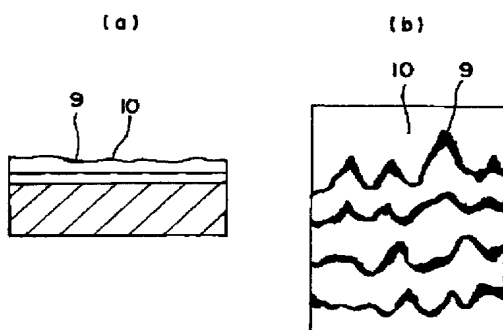
【図1】



【図2】



【図3】



【図4】

